alberta pork production handbook

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Alberta
AGRICULTURE
Pork Industry Branch

# FARROWING FACILITIES

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B. Creep Area
C. Sow Stall
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A well designed, productive farrowing area is one of the keys to success in a modern hog operation.

## A. The Room

All-in, all-out multiple room farrowing facilities are recommended (Figure 1 and 2). Sows are moved into and out of the rooms as a group. Between sow groups, the room is washed and sanitized.

A common method to size all-in all-out farrowing areas is to determine the desired number of farrowings per week. This determines sow group size and the number of farrowing crates per room. The number of farrowings per week equals the number of sows times the number of litters per sow per year, divided by 52. For example, 150 sows with 2.1 litters per sow per year would indicate 6 farrowings per week (150 x 2.1/52 = 6.05). This requires a farrowing room with 6 crates. The minimum number of farrowing rooms required is equal to weaning age in weeks plus one. For example, if weaning age is to be 4 weeks, 5 farrowing rooms will be required.

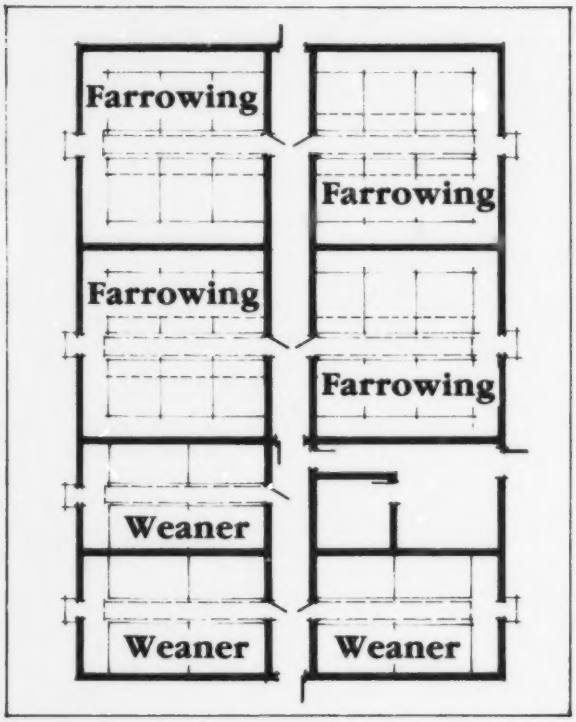



**Figure 1: Multiple room farrow-wean facility, centre hall**

Washable materials and waterproof electrical fixtures allow thorough washing.

Frequent manure removal is a must to minimize odors in the room. Several alternatives for manure removal exist, e.g. pull the plug, flush, manual scrape and pump flush (CPS Plans M-3700 and M-8700 discuss manure systems).

Each room in a multiple room farrowing area is individually heated and ventilated. An 18 to 20C (65 to 70F) temperature is suitable for the room, but temperature in each creep area should be maintained at a level suitable for the growth stage of the pigs (See Canada Plan Service Plan #9750). Hovers or covered creeps with heat lamps are preferable methods of maintaining a 29C (85F) temperature for baby pigs and a draft free area that is dry. A dimmer on the heat lamp can be used to gradually reduce the temperature as pigs grow older.

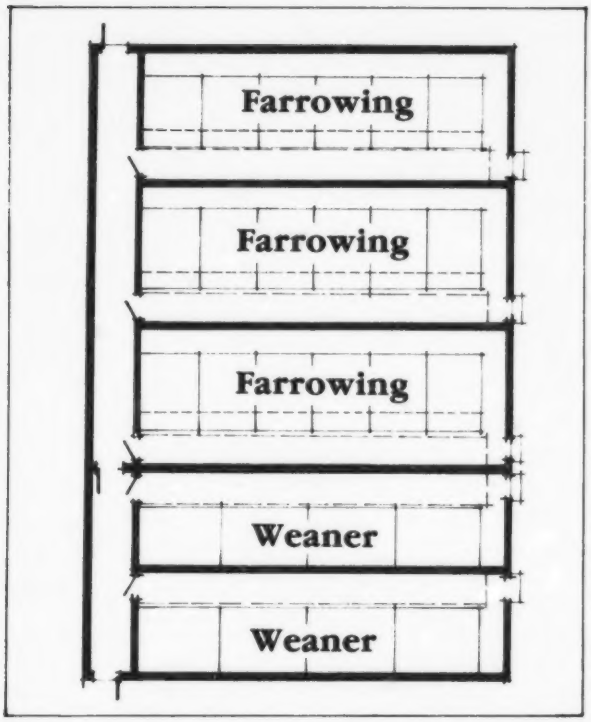



**Figure 2: Multiple room farrow-wean facility, side hall.**

Farrowing crates are widely used to house the sow and litter. The sow is placed in the farrowing crate a few days before farrowing and stays in the crate until the litter is weaned, usually 3-5 weeks later. Three basic reasons for the use of farrowing crates are:

- to restrict the sow's movement and thus reduce the possibility of her injuring or crushing piglets
- to force the sow to lie down slowly, giving the piglets a chance to get out of her way and avoid being crushed
- to provide two environments; one for the piglets which require a higher temperature than the sow and one for the sow.

A majority of death losses take place in the first 3 - 4 days of the piglets life. Losses are due to crushing and chilling. Initially piglets respond to heat and are attracted to a warm object, the sow's udder. After the first suckle the piglet must be trained to move away from the sow and to the warm creep area to sleep. This is accomplished by taking them away after nursing and placing them in the dry, warm and comfortable creep area, 2 or 3 times, or until they learn. After 7-8 days healthy piglets are agile and responsive enough to get out of the sow's way as she changes position.

A farrowing crate must provide three zones:

- a safe area for the piglets, one part of which has a higher temperature for piglet comfort
- an interaction area where the piglets have access to the sow's udder for feeding
- a sow area that allows the sow eat and drink but restricts her location and motion.

In the farrowing crate these zones are provided by the creep area and the stall area, usually utilizing an area of 35 to 45 $ft^2$ (3.5 to 4.5 $m^2$). Canada Plan Service Leaflets 3800 and 3812 describes farrowing crates.

## B. Creep Area

The creep area is an area in a farrowing crate or pen for the nursing piglet, which provides the required warm draft-free environment safe from the sow.

Several different creep layouts are possible. Side creeps (Figure 3) may be areas 18 to 24 in. (450 to 500 mm) on either side of the sow stall and running the length of the sow stall.

Front creeps (Figure 4) are 24 in. wide (600 mm) deep across the front of the crate, with length being the width of the crate, usually 60 in. (1500 mm) long. When front creeps are used, side creeps are retained.

Another style of creep is the triangular creep (Figure 5). This is a compromise between front creeps and side creeps.

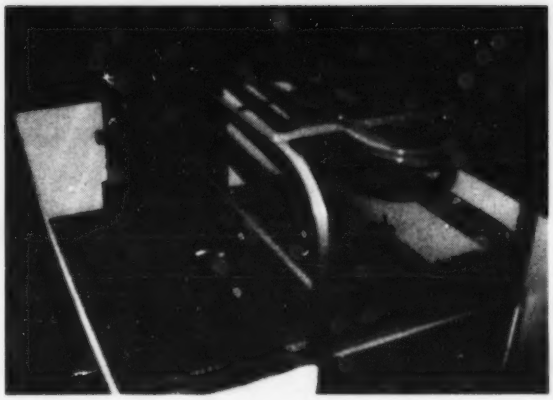


**Figure 3: Farrowing crate with side creeps**

**Figure 4: Farrowing crate with front creeps**

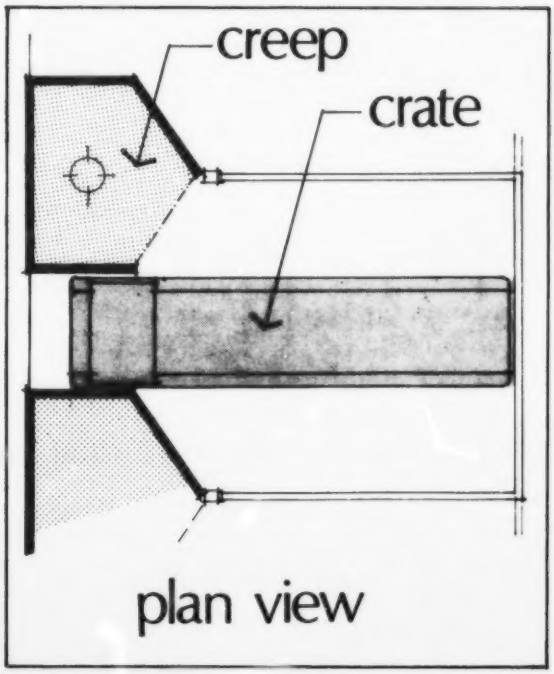



**Figure 5: Triangular creep**

## C. Sow Stall

The sow stall or crate provides the sow space, and eating and drinking facilities. Crates are available in a variety of cross sections and sizes. Two types are common:

- straight sided (Figure 6) and
- crates with sloped sides (Figure 7)

In either case an adjustable flared bottom rail or a rail with fixed fingers is used at the bottom of the crate.

Farrowing crates in some alternate designs have been placed diagonally in the farrowing pen. This makes it convenient to provide a triangle-shaped creep. A 12 ft wide room could be used for two rows of crates. For this alternative the producer is advised to obtain the advice of an agricultural engineer or swine specialist.

Some of the features that a farrowing crate should have are:

- bars across the top to prevent the sow from rearing and jumping out of the crate
- an anti-crush rear gate to provide an escape route of at least 8 in. (200 mm) for the piglets between the rear of the sow and the rear of the crate
- a movable front gate to adjust the sow space to sow size. If the crate has a partially slatted floor this arrangement keeps the sow's rear over the slats
- side rails that are adjustable for sow height or a finger bar.

The dimensions of the crate must be sufficient to confine the sow. It must be long enough to allow her room to move forward and back, to change from a standing to a lying position and narrow enough to prevent her turning around. The critical dimensions are length available to the sow, width of the upper portion of the crate and width available for the sow while suckling. Estimates of sow dimension based on liveweight are given in Table 1. Length (L) is the nose to tail dimension of the standing or lying sow, height (H) is the height of the sow (also the width of the lying sow) and depth (D) is the body thickness of the sow.

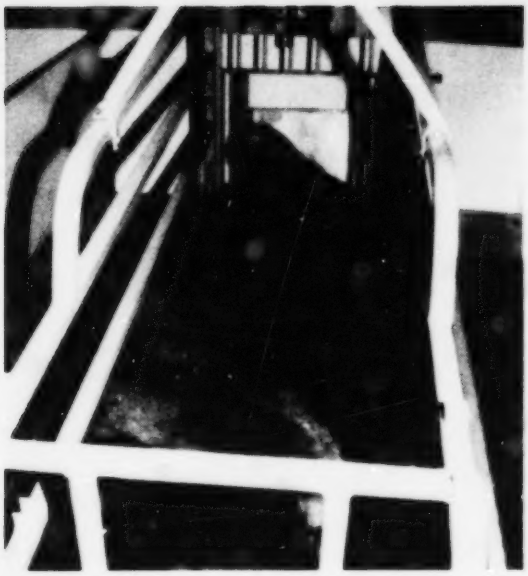


**Figure 6: Straight-sided farrowing crate**

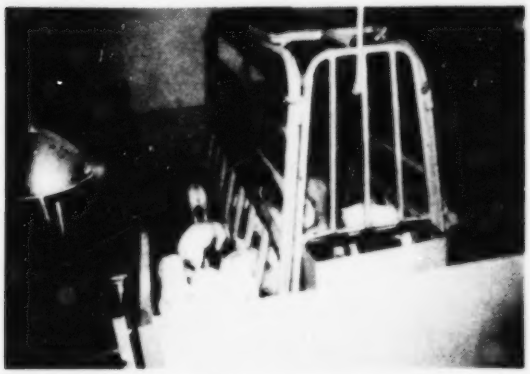


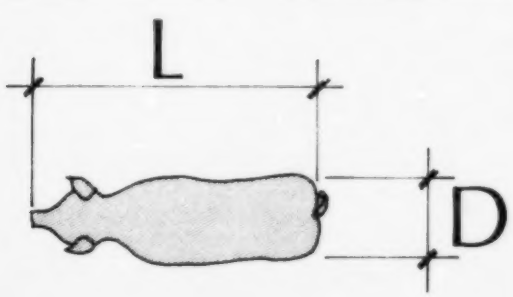
**Figure 7: Slope-sided farrowing crate**

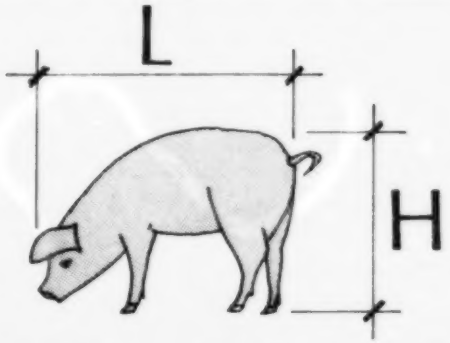
The length of the crate must be 20-25 per cent longer than the sow to allow her the freedom of movement to stand up and lie down. The top portion of the crate must be narrow enough to prevent the sow from turning around and the bottom portion must be wide enough to allow her to lie down. A sow can turn around in a width 2.4 times her body depth (D).

Figure 8 shows some of the important dimensions of a farrowing crate. L1 is the useable sow space which ranges from 65 to 83 in. (1650 to 2100 mm) depending on the sow size. H1 gives the height of the bottom bar. This bar must be high enough so that it does not block the top row of teats, but be low enough to keep the sow in the crate. A height of 8 to 10 in. (230 to 250 mm) is suggested. If this rail is higher than 10 in. (250 mm), smaller sows may become trapped under it. H2 gives the height beneath the feed trough. Where this height is enough for the sow to put her head under the trough, she can use more of the crate than the length defined by L1. If the trough is 10 in. (250 mm) or more above the floor, the sow's head will not be trapped.

If the trough is lower than 10 in. (250 mm) then the bottom of the trough must slope up towards the sow and a steel plate inserted under it. The steel plate prevents the sow's head from being pushed too far under the trough and becoming stuck.

**Table 1: Estimated Dimensions of Sows in Inches (mm)**




| Sow weight lb (kg) | 220 (100) | 275 (125) | 330 (150) | 385 (175) | 440 (200) |
|---|---|---|---|---|---|
| Length (L): | 55" (1370) | 59" (1480) | 63" (1570) | 66" (1650) | 69" (1725) |
| Height (H): | 28" (694) | 30" (745) | 32" (790) | 33" (830) | 35" (870) |
| Depth (D): | 11" (274) | 12" (295) | 13" (315) | 13.5" (330) | 14" (345) |

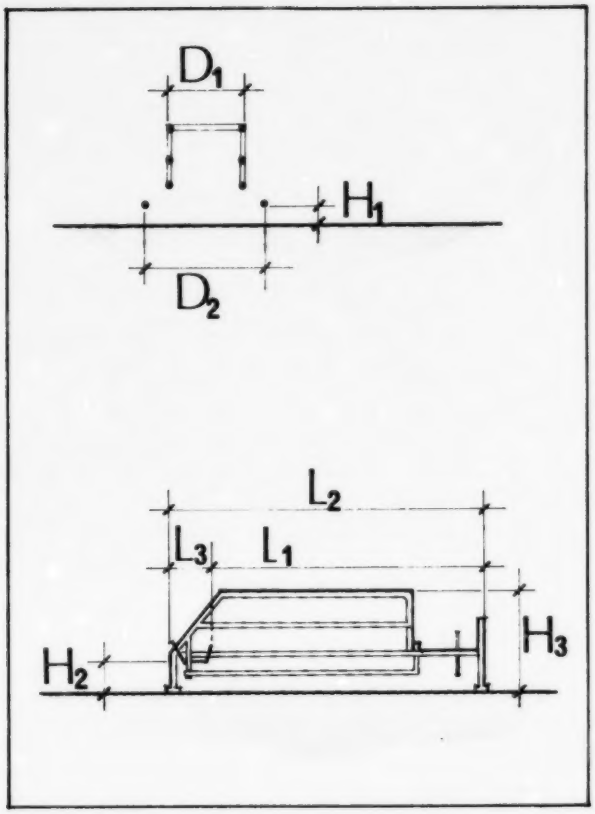



**Figure 8: Farrowing crate dimensions**

H3 is the overall height of the crate, usually in the range of 36 to 39 in. (900 to 1000 mm). The width of the crate, D1, must be narrow enough to prevent her from turning around and also to restrict her actions so that as she lies down she is slowed down and the piglets can move away from under her. Usual dimensions are 18 to 24 in. (460 to 600 mm). The bottom rails must be far enough apart, D2, to allow the sow to lie down for suckling. Typical dimensions are 30 to 36 in. (750 to 900 mm), with adjustments.

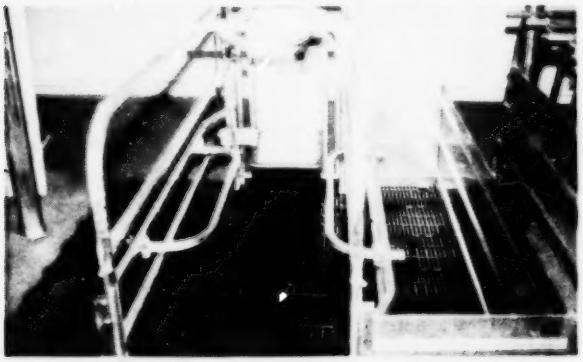


**Figure 9: Anti-crush bars in a farrowing crate**

Some producers fit crates with anti-crush bars (Figure 9), especially for small sows and wide crates. These are bars that push up out of the way as the sow stands up, but flop down beside her so that she is restricted as she lies down.

Another method of removing piglets out from under the sow is by a photo-cell controlled blower (Figure 10). As the sow breaks the light beam a blower is activated. This blower creates a draft in the area beneath the sow. The draft causes the piglets to vacate the area.

**Figure 10: Photo-cell activated blower**

An alternative design to the adjustable bottom bar farrowing crate is the 'finger crate'. This style of crate has finger projections on a non-adjustable bar.

Typically the bottom rail on a finger crate is higher (14 in or 350 mm) than on a crate with an adjustable bottom rail. A minimum of 5 prongs (fingers) angled outward are needed to retain the sow. A variable finger height of 3 to 6 in. (75 to 150 mm) from the floor is recommended. The fingers at the rear of the crate are shorter than those at the front, allowing some room for the sow to move her hind legs.

## D. Flooring for Sows and Weaners

Several types of flooring including concrete, metal and plastic are used under farrowing crates and weaner decks. The choice of flooring must be based on age and size of the animal and consider standing-laying comfort, slipperiness, cleanliness and the ease of cleaning, and costs.

Sows require a strong, comfortable floor that is not too warm. A heated floor under a sow will cause udder problems. A slat with a large bearing surface, but which cleans easily is required. A rough, but not sharp, slat surface is required so that the sow has traction.

Baby pigs prefer a solid surface for walking and lying, and they need protection from drafts if the floors are slatted. If the floors are solid concrete, an insulated surface that is warmer than the concrete may be required. Therefore, it is recommended that a non-skid overlay such as a carpet remnant be placed on the creep floor for two or three days.

Weaners require a smooth floor with no large slats or rough edges. The maximum opening size between slats is 3/8 in (10 mm). Weaners feet tend to get caught in openings that are larger. Comfort of the weaner pig is affected by the bearing surface, structure and temperature of the floor. Weaners tend to prefer plastic or plastic covered floors. The soft surface is comfortable for feet and for sleeping. Weaners also feel warm on plastic flooring.

Cleanliness and ease of cleaning are important flooring characteristics. Some slat shapes tend to store micro-organisms on the sides and bottom. Triangular shaped floor elements are the easiest to clean.

There are several flooring choices to consider when selecting for farrowing crates or weaner decks (Figure 11).

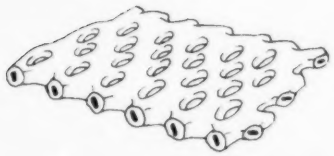
Included are:

- plastic slats
- plastic covered metal
- wire mesh, both woven and welded
- cast iron
- fibreglass
- concrete

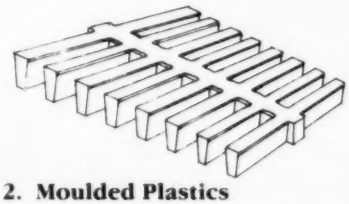
In some cases a combination of materials may be used.

## E. Waterers

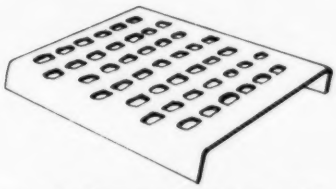
Water is required for both the sow and baby pigs. Separate supplies for the baby pigs is recommended. A pan or jar waterer may be required to medicate smaller pigs. A small nipple drinker should be mounted about 4 in. above the floor in a location such that any spilling does not wet the entire floor. The sow should have a nipple or bite drinker to provide 0.5 gal per minute (2.25 L/min) which should be mounted so it will not wet the floor or baby pigs. Locate the waterer above the feed trough where it can be reached both from a lying or standing position is advised.



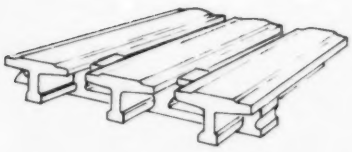
1. **Plastic coated, Unflattened Expanded Metal**



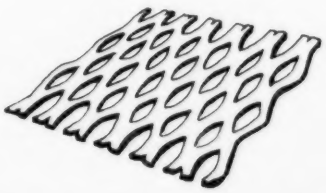
2. **Moulded Plastics**



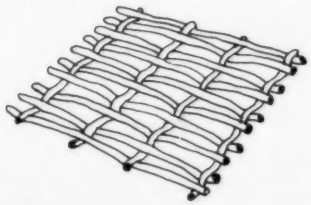
3. **Perforated Metal Planks**



4. **Fibreglass T Slats**



5. **Flattened Expanded Metal**



6. **Woven Wire**

**Figure 11: Flooring Types**

## F. Farrowing Pens

Farrowing pens provide very simple farrowing accommodations. The simplest is a 7 ft x 8 ft (2100 x 2400 mm) to 8 ft x 9 ft (2400 x 2700) pen with bars around the perimeter to reduce crushing of the piglets by the sow. A heated creep area is added to give the piglets a warm, safe environment. Feed and water are provided to the sow in portable troughs.

## G. Environment

Two environments must be maintained in farrowing facilities: one for the sow and one for the piglets. Sows are comfortable at 16 - 25°C; piglets are comfortable at 28 - 32°C depending on age and size. A common method of providing two environments is to maintain the room at a temperature that is comfortable for the sows and to heat creep areas for the piglets.

**Figure 12: Heat lamp**

Creep areas must be draft free. The usual method of heating creeps is to use floor heat, either by hot water pipe or electric heat cable in a solid floor. Heat lamps are used to supplement this heat during the first few days of the piglet's life (Figures 12, 13 and 14).

**Figure 13: Heated floor creep (Note comfortable pigs)**

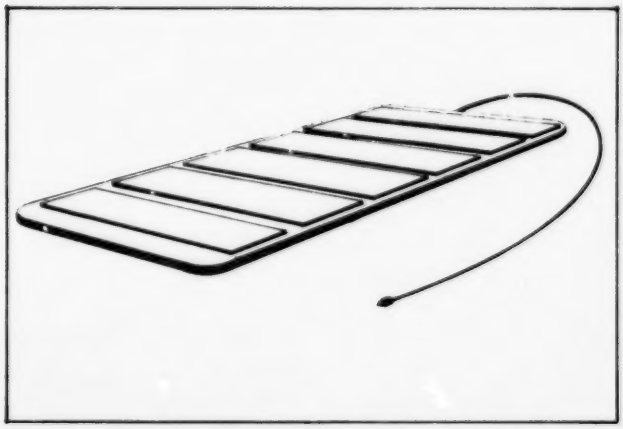


**Figure 14: Electrically heated rubber mat**

Enclosed covered creep areas, known as hovers, are also being used to provide a warm environment for the piglets (Figures 15, 16 17). Hovers have the advantage of a low energy requirement and still provide a comfortable environment for the piglets. To prevent cold updrafts they have solid floors and a roof and three sides. In some cases a fourth side with small doors or clear plastic door strips can be used. The disadvantage of using hovers is that the piglets in them cannot be observed unless the hovers have transparent covers or doors.

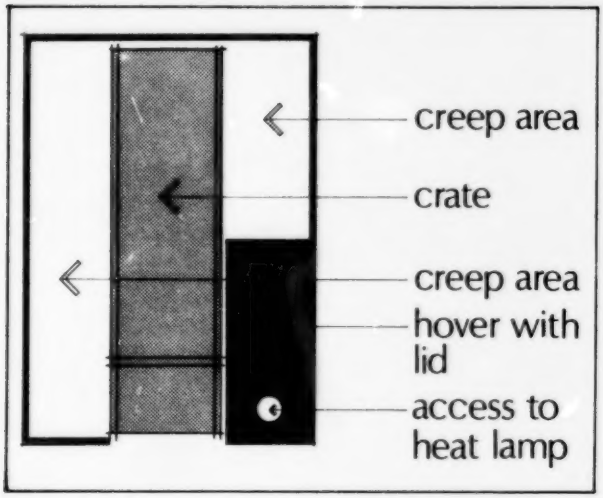



**Figure 15: Hover on side creep**

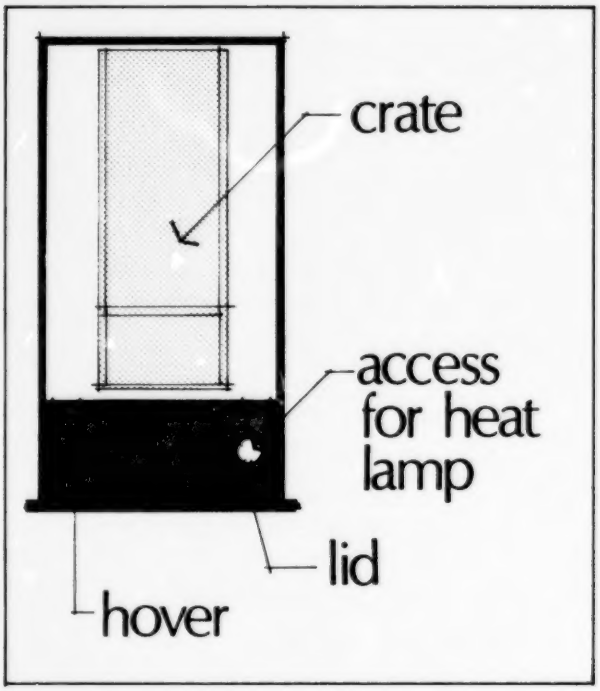



**Figure 16: Hover on front creep**

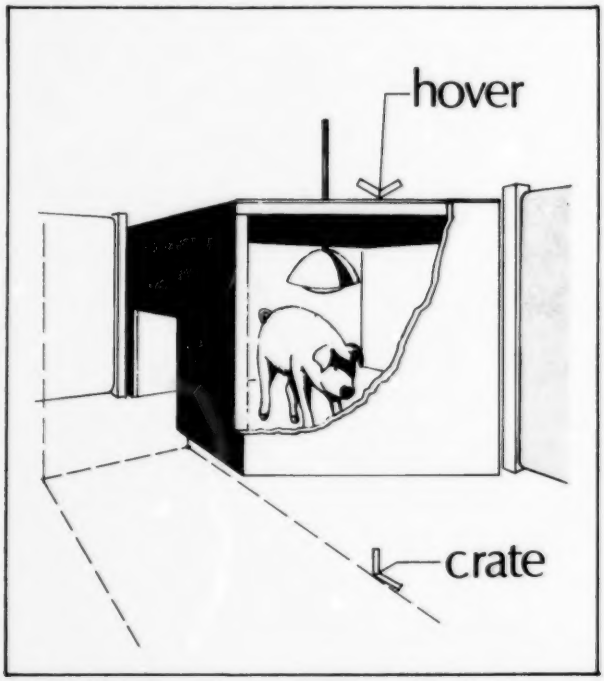



**Figure 17: Hover on triangular creep**

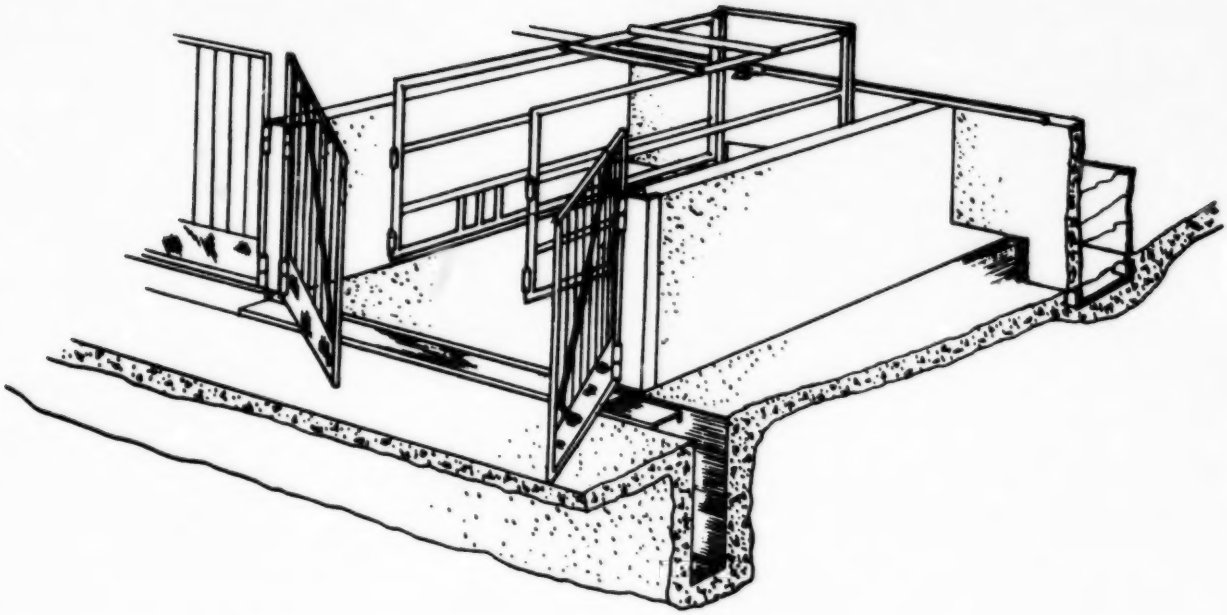


**Figure 18: Convertible crate/pen - weaner pen**

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